SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

      BE IT KNOWN THAT I, HIROKI KOBAYASHI, a
citizen of Japan residing at Kanagawa, Japan has
invented certain new and useful improvements in

  SOFTWARE INSTALLING METHOD FOR SETTING PRINTING
ENVIRONMENT IN A COMPUTER ON AN INDIVIDUAL COMPUTER
                  BASIS

of which the following is a specification:-

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a print system using a network and, more particularly, to an

5 installing method of software that is required to be installed to a host apparatus so as to allow a user to use a printing apparatus through the host apparatus, and a program for causing a computer to execute such a method.

10 2. Description of the Related Art

In recent years, it has become possible to share a host apparatus, a printing device, a memory device, a scanner, etc. by a plurality of users (client terminals) by connecting these equipments through a

15 network such as a local area network (LAN). In order to achieve printing in such a network environment, a host apparatus needs a printer driver for controlling a printing device, which operates with an operating system (OS) to create print data. The host apparatus also

20 needs data transfer software for transferring the print data from the host apparatus to the printing device through the network.

Usually, in many cases, such software (the above-mentioned printer driver and data transfer

25 software) is distributed in the form of a CD-ROM or a

flexible disk (FD), which is enclosed in a package of the printing device. Japanese Laid-Open Patent Application No. 11-134135 discloses an installation system, which can install software (printer driver)

5   necessary for printing by downloading the software from a printing device connected through a network at the time of executing the printing.

In a case in which many printing devices are connected to a network and a number of terminals such as

10 a host apparatus connected to the network is also large, it is necessary to perform a setting operation for the printing devices used by each of the terminals on an individual terminal basis. That is, it is necessary to install a printer driver for the printing device to be

15 used on an individual terminal basis. Moreover, the printing environment used by the terminals may differ among the terminals, and it is necessary to set the software to set up the printing environment on an individual terminal basis.

20   Conventionally, a printer driver and software for setting a printing environment are prepared for each of a plurality of terminals which use the same printing device, and the printer driver and the software are stored in a recording medium such as a CD-ROM together

25 with install software and the recording medium is

distributed to each group of terminals using the same printing device. Such software is referred to as an installer. In this case, since a printer driver varies among the printing devices, the number of the installers

5 (that is, printer drivers) must be equal to the number of printing devices.

Therefore, if the number of the printing devices connected to a network is increased due to an increase in the scale of the network, the number of CD-

10 ROMs to be prepared is increased similar to the number of the printing devices. For example, if 100 sets of printing devices are connected to a network, 100 kinds of CD-ROMs must be produced and distributed. Although an installer can be distributed not in the form of a CD-

15 ROM but from a server or the like through the network, the number of the installers to be prepared does not change and 100 kinds of installers must be produced when 100 sets of printing devices are connected to the network.

20 Furthermore, there may be a case where different printing environments are set in even the terminals using the same printing device.
For example, the setting for printing environment such as whether to set color printing or whether to set

25 double-side printing is different for each terminal.

Thus, in order to set different printing environment in the terminal on an individual terminal basis, the number of installers to be produced must be equal to the number of terminals connected to the network. For example,

5 when 100 printing devices are connected and an average of ten sets of terminals are connected to each of the printing devices, the number of terminals is 1000 and 1000 kinds of installers must be produced.

Thus, when the scale of a network is large,

10 there is a problem in that the work for producing installers takes a time, which is a large burden for a network administrator.

SUMMARY OF THE INVENTION

15 It is a general object of the present invention to provide an improved and useful software-installing method in which the above-mentioned problems are eliminated.

A more specific object of the present

20 invention it to provide a software-installing method for easily installing a device driver and setting a printing environment in a terminal on an individual terminal basis, and a program which causes a computer to executed such a software-installing method.

25 In order to achieve the above-mentioned

objects, there is provided according to one aspect of the present invention a software-installing method for installing software in a computer so as to use one of a plurality of printing devices connected the computer

5   through a network, the method comprising the steps of: acquiring a template of a scenario which describes procedures for installing the software; acquiring data corresponding to parameters contained in the template with respect to said computer by searching an

10   installation database; and producing the scenario which is specific to said computer by incorporating the acquired data into the parameters of said template.

According to the above-mentioned invention, the template of the scenario is to describe items common

15   to the plurality of computers, and the data specific to each computer is acquired from the database at the time when the software is installed. That is, the network administrator produces and provides only the template and the database, and the computers automatically

20   produce the scenario specific to each of the computers on an individual computer basis. Therefore, the network administrator can save time and effort to produce the scenario specific to each computer, thereby reducing expenses for maintaining and managing the network.

25   The software-installing method according to

the present invention may further comprise a step of
inputting the produced scenario to an installation
program. Additionally, the software-installing method
may further comprise a step of acquiring the data

5   corresponding to the parameters from the installation
database located outside said computer. Further, the
software-installing method may further comprise a step
of acquiring data regarding print setting information as
data for said parameters from said installation database.

10   Additionally, there is provided according to
another aspect of the present invention a software-
installing method for installing software in a computer
so as to use one of a plurality of printing devices
connected the computer through a network, the method

15   comprising the steps of: producing a template of a
scenario which describes procedures for installing the
software; and producing the scenario, which is specific
to said computer, based on the produced template.

The above-mentioned software-installing method

20   can be described by a program so that a computer can
perform the software-installing method. The program may
be stored in a processor readable medium such as a CD-
ROM so that a computer acquires the program by reading
the medium.

25   Another objects, features and advantages of

the present invention will become more apparent from the following description when read in conjunction with the accompanying drawings.

5   BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of a structure of a network system to which a software-installing method according to the present invention is applied;

FIG. 2 is a flowchart of a process procedure

10   for installing software;

FIG. 3 is an illustration for explaining a process of producing a scenario from a template;

FIG. 4 is an illustration showing an example of the template;

15   FIG. 5 is illustration of an example of the scenario produced so as to install software into a host apparatus in the network shown in FIG. 1;

FIG. 6 is illustration of another example of the scenario produced so as to install software into a

20   host apparatus in the network shown in FIG. 1;

FIG. 7 is a flowchart of a process for installing a printer driver and setting information into a host apparatus;

FIG. 8 is a flowchart of a process of

25   acquiring print setting information based on the host

name of the host apparatus;

FIG. 9 is an illustration showing the contents of the database, which describes a host name as a key parameter and print setting information related to the

5   host name; and

FIG. 10 is an illustration showing the contents of the database, which describes a log-in name as a key parameter and print setting information related to the log-in name.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A description will now be given, with reference to the drawings, a software-installing method and a program for causing a computer to perform such a

15   software-installing method according to an embodiment of the present invention.

FIG. 1 is an illustration of a structure of a network system to which a software-installing method according to the present invention is applied.

20   The network shown in FIG. 1 is a large-scaled network, which is formed by connecting a network N1 and a network N2 to each other through a router R1.   Host apparatuses 1-1, 1-2 and 1-3, a server apparatus 2 and a printing device 3-1 are connected to the network N1.

25   Host apparatuses 1-4, 1-5 and 1-6 and a printing device

3-2 are connected to the network N2. The host

apparatuses 1-1 through 1-6 are various kinds of

computers such as a personal computer and a notebook

size computer. The printing devices 3-1 and 3-2 are

5   printers for performing printing operations based on the

outputs of the computers.

A printing operation requested by the host

apparatus 1-1 through 1-6 is performed by the printing

devices 3-1 and 3-2 in accordance with the following

10   procedure. It should be noted that, in the following

description, the host apparatuses 1-1 through 1-6 may be

referred to as a host apparatus 1 as a generic

designation, and also the printing devices 3-1 and 3-1

may be referred to as a printing device 3 as a generic

15   designation.

When a print instruction is issued by an

application program, which runs on the host apparatus 1,

print data is produced by a device driver which is most

appropriate for the printing device 3, which is to

20   perform the printing. After the print data is produced,

the print data is transferred by data transfer software

to the printing device 3 having the designated address.

Thereby, a printing result is output from the printing

device 3.

25   A description will now be given, with

reference to FIG. 2, of a process for installing to the host apparatus 1 the software (a printer driver and data-transfer software) necessary for using the printing device. FIG. 2 is a flowchart of a process procedure

5   for installing software.

A recording medium such as, for example, a CD-ROM, in which an installation program (installer) is described, is supplied to the host apparatus 1 (refer to the host apparatus 1-1 in FIG. 1). A processor of the

10   host apparatus 1 performs the following software installation processes by executing the installation program. Additionally, a scenario (installation information description file), which is a file describing the installation information for executing

15   the installer, is also supplied to the host apparatus 1 together with the installer.

When the processor of the host apparatus 1 starts to execute the installation program, it is determined whether or not a scenario (installation

20   information description file), which was produced previously by a management person or the like, has been supplied (step S1). If the scenario has been supplied (step S1: Yes), the installation program reads the contents of the scenario (step S2). As to how to

25   provide the scenario, there is considered a method of

designating the scenario as a starting argument of the installation program.

A device driver name and names of applications (programs), which are to be installed into the host apparatus 1, and a setup of each application, etc. are described in the scenario. For example, the scenario describes that a device driver of a specific printer 3 be installed and "double-sided printing" be performed as the setup for the device driver. Moreover, the scenario describes that a port monitor used with the operating system (for example, Windows(R)) of the host apparatus 1 be installed and an output IP address be designated as a port setup.

After reading the above-mentioned scenario, the installation program executes installation and setup of software (programs such as a device driver and applications) by referring to the data described in the scenario (step S3).

Thereafter, each time the installation of a set of software is completed, it is determined whether or not all sets of software has been completed (step S4). If other sets of software needs to be installed (step S4:No), the routine proceeds to an installation process of the set of software described at the next position (return to step S3). After completion of all sets of

software (step S4:Yes), the software installation process is ended.

If the scenario, which is a file describing the installation information, is not provided, the installation program itself can also perform the installation of software. Generally, in many cases, an original installation program is prepared for each application. In such as case, an interface may be provided between the installation program and each application so as to link the operations so that an installation command can be issued for the installation program provided to each application.

That is, when it is determined, in step S1, that the scenario (installation information description file) is not given (step S1:No), installation and setup of software is performed while the installation program itself refers to initial values previously provided inside the installation program (step S5). Thereafter, each time the installation of a set of software is completed, it is determined whether or not all sets of software has been completed (step S6). If other sets of software needs to be installed (step S6:No), the routine proceeds to an installation process of the set of software described at the next position (return to step S5). After completion of all sets of software (step

S6:Yes), the software installation process is ended.

As mentioned above, if a scenario is given, the host apparatus 1 reads the scenario according to the installation program, and installs software required for

5   performing a printing operation by a printing device. Although the information regarding the printer driver which should be installed to the host apparatus 1 and printing environment setting information are described in the scenario, in order to install a different printer

10 driver to the host apparatus 1 or to set up a different printing environment on an individual apparatus basis, it is necessary to change the contents of the scenario.

Thus, in the present embodiment, a different scenario is installed to each host apparatus 1 by

15 producing the scenario, which is referred to by the installation program, at the time of installing software. In order to do this, a template for installation, which is a base of a scenario, is produced, and setting information, which varies with each host apparatus 1, is

20 assumed to be parameters. Thus, a scenario specific to each host apparatus 1 is produced by reading the parameters in the template from a database and setting the parameters in the template.

FIG. 3 is an illustration for explaining the

25 process of producing a scenario from a template. A

network administrator (a person who manages a network)
creates beforehand a template 11 for installation, which
describes basic items of a scenario, using a template
creation tool (scenario tool) 12. Although the network
5   administrator creates the scenario itself conventionally
using the scenario tool, the network administrator
creates the template 11 used as a basis of a scenario in
the present embodiment.

The template 11 created by the administrator
10   is supplied to the host apparatus 1 together with an
installation program (installer 13). The installer 13
contains an installation manager 13A, a driver installer
13B for installing a printer driver, and software
installer 13C for installing software which executes a
15   printing environment setup.

The template 11 supplied to the host apparatus
1 with the installer 13 is supplied to a scenario
producing part 14. The scenario producing part 14
produces a scenario 16 based on the template 11 by
20   referring to a database 15 for installation.

FIG. 4 is an illustration showing an example
of the template 11. The template 11 shown in FIG. 4
describes that installation of software be performed in
the following flow.

25   1) Install RICOH Port Monitor.

2) Install a printer driver.

3) Create a printer port, which outputs data to the IP address of a printing device.

4) Create a printer object by relating the printer driver installed in the above item 2) with the printer port created in the above item 3).

The setting items common to the host apparatus 1 are described in the template 11. Additionally, in the template 11, the setting items which should be set to values specific to each host apparatus 1 are described as parameters. In FIG. 4, parts sandwiched by signs "@" correspond to the parameters. In the example shown in FIG. 4, the name of the printer driver (@DRIVERNAME@) to be installed, the initialization file (@INI@) to be used, the network address (@ADDRESS@) of the printing device, the name (@PNAME@) of the printing device, and a user identification number (@UID@) are set as parameters.

The scenario producing part 14 is a tool for producing a scenario based on setting items specific to a user or a host apparatus, and operates on a host apparatus (client PC). The scenario producing part 14 searches the database 15 using the name of the host apparatus 1 which is currently installing the software or a log-in name so as to acquire print setting

information specific to the host computer 1 concerned.

Thus, the scenario 16 specific to the host apparatus 1

concerned is produced by incorporating the acquired

print setting information into the parameters of the

5   template 11.

FIG. 5 and FIG. 6 are illustrations of

examples of the scenario produced so as to install

software into the host apparatus 1 in the network shown

in FIG. 1. It should be noted that, conventionally, the

10   network administrator produces the scenario for each

host apparatus 1 such as shown in FIG. 5 or FIG. 6 by

using a scenario producing tool, and distributes the

produced scenario to each user. On the other hand, in

the present embodiment, the scenario specific to each

15   host apparatus 1 can be automatically produced in the

host apparatus 1 by creating the template and the

database as mentioned above.

The example shown in FIG. 5 is an example of

the scenario for relating the host apparatuses 1-1, 1-2

20   and 1-3 provided in the network N1 to the printing

device 3-1. The printing device 3-1 is given the

printer name "Sales Section No.1", and the printer

driver which drives the printing device 3-1 is "R-Driver

A". Additionally, the network IP address of the

25   printing device 3-1 is 127.0.0.1. Although the printer

3-1 is set to perform double-sided printing, this setup
is set in "eigyo1.ini" which is an initialization file
(@INI@) for the Sales Section No.1. The example shown
in FIG. 6 is an example of the scenario for relating the

5 host apparatuses 1-4, 1-5 and 1-6 provided in the
network N1 to the printing device 3-2. The printing
device 3-2 is given the printer name "Sales Section
No.2", and the printer driver which drives the printing
device 3-2 is "R-Driver B". Additionally, the network

10 IP address of the printing device 3-2 is 127.0.1.1.
Although the printer 3-2 is set not to perform double-
sided printing, this setup is set in "eigyo2.ini" which
is an initialization file (@INI@) for the Sales Section
No.2.

15   Here, the user identification number @UID@ is
also set as a parameter in the template 11. Although
the user identification number is conventionally set
separately after installation of a printer driver or
software for printing, the user identification number in

20 the present embodiment can be set simultaneously when
installing the printer driver.

        The user identification number (@UID@) is an
identification number necessary for the network
administrator to specify a user. That is, although

25 persons other than the network administrator may change

the host name or the log-in name, printing condition of each user can be grasped and a printing environment of each user can be set up by using the user identification number since the user identification number is

5   information which the network administrator creates.

Moreover, the items set up by the initialization file (@INI@) are not only a setup regarding the above-mentioned double-sided printing and color output, and also setting items necessary for

10   linking with other software when setting a printing operation can be described in the initialization file. Therefore, various print setting information items can be set up for each host apparatus by setting the initialization file as a parameter of the template of

15   the scenario.

A description will now be given, with reference to FIG. 7, of a process for installing a printer driver and setting information necessary for printing into each host apparatus 1 by the in installer

20   13 using the above-mentioned scenario producing part 14. FIG. 7 is a flowchart of the process for installing a printer driver and setting information necessary for printing into each host apparatus 1.

First, the scenario producing part 14 is

25   activated so as to execute the scenario producing

program to acquire the template 11 for installation

(step S11). Next, the scenario producing program

searches the database 15 based on the host name of the

host apparatus or the log-in name so as to acquire the

5   print setting information assigned to the host name or

the log-in name (step S12). Then, the scenario

producing program produces the scenario 16 by

incorporating the acquired print setting information

into the template 11 (step S13). Thereby, the scenario

10   16 specific to each host apparatus 1 is produced. The

scenario 16 is input to the installer 13 (step S14), and

the printer driver is installed in the host apparatus 1

concerned based on the contents described in the

scenario 16 and the print setting information is set up

15   (step S15).

        A description will now be given of a process

of producing the scenario 16 from the template 11.

        First, a process of acquiring print setting

information based on the host name of the host apparatus

20   1 will be explained.

        FIG. 8 is a flowchart of the process of

acquiring print setting information based on the host

name of the host apparatus 1. When the scenario

producing part 14 is activated, the scenario producing

25   program acquires the host name of the activated host

apparatus 1 (step S21). The scenario producing program

reads one line of the template (refer to FIG. 4) which

is designated by, for example, a start argument (step

S22), and, then, determines whether or not any

5   parameters to be set up are described in the line (step

S23). The parameters which should be set up are

described in the form of environment variable such as

"@DRIVERNAMER@" or "@ADDRESS@".

        If there is described a parameter to be set up

10   (step S23;Yes), the data corresponding to the parameter

concerned is acquired from the print setting information

assigned to a predetermined key parameter by referring

to the database 15 given by the administrator (step S24).

Here, in the preset embodiment, the above-mentioned key

15   parameter is the host name of the host apparatus 1 or

the log-in name of a user who currently logs in to the

host apparatus.

        The database 15 may be stored in a recording

medium in which the installer 13 is stored, or may be

20   stored in the server apparatus 2. When the database 15

is stored in the server apparatus 2, the server

apparatus 2 is accessed through the network so as to

acquire the print setting information from the server

apparatus 2.

25   When there are no data (parameter) to be

converted in the line of the template (step S23: No), the routine proceeds to step S26.

The database 15 stores information regarding a related table which contains the key parameter and the print setting information related to the key parameter. For example, the related table contains the relation to the IP address of the printing device 3 to which data is output. The scenario producing program acquires the print setting information related to each host apparatus 1 by searching the database 15.

FIG. 9 is an illustration showing the contents of the database 15, which describes the host name as the key parameter and the print setting information related to the host name. As shown in FIG. 9, the values of the parameters are related to the host name, and are stored in the database. In this example, with respect to the host name "host1-1", the parameter (@DRIVERNAME@) corresponding to the name of the printer driver to be installed is set as "R-Driver A", and the parameter (@ADDRESS@) corresponding to the output IP address is set as "127.0.0.1". The kind of the database can be determined in accordance with the scale of a user environment and infrastructure such as use of commercially available SQL server or a table according to CSV file.

FIG. 10 is an illustration showing the
contents of the database 15, which describes the log-in
name as the key parameter and the print setting
information related to the log-in name. In this example,
5   with respect to the log-in name "hayashi", the parameter
(@DRIVERNAME@) corresponding to the name of the printer
driver to be installed is set as "R-Driver B", and the
parameter (@ADDRESS@) corresponding to the output IP
address is set as "127.0.1.1".

10   After acquiring the information from the
database 15, the scenario producing program rewrites the
parameters in the template 11 according to the acquired
information (step S25). Then, it is determined whether
or not the above-mentioned process is applied to all
15   lines of the template (step S26). If there is an
unprocessed line (step S26: No), the routine returns to
step S22 so as to perform the same process as mentioned
above. When the execution of the above-mentioned
process to all lines of the template is completed (step
20   S26: Yes), the routine is ended. In this state, the
template 11 has been rewritten to the scenario 16, which
is specific to the host apparatus 1.

              Thereafter, the scenario 16 is input to the
installer 13, and, as shown in FIG. 7, the installation
25   of the printer driver to the host apparatus 1 and the

setup of the print setting information are performed.

It should be noted that the installation program and the setting information acquisition program according to the software installation explained in the

5 present embodiment may be stored in a processor readable recording medium such as a hard disk, a flexible disk, a CD-ROM, an MO or a DVD so that the programs are executed by being read from the recording medium by a computer. Alternatively, the programs may be stored in a

10 transmission medium which can be distributed through a network such as the Internet.

The present invention is not limited to the specifically disclosed embodiments, and variations and modifications may be made without departing from the

15 scope of the present invention.

The present invention is based on Japanese priority applications No. 2002-191351 filed June 28, 2002 and No. 2003-160941 filed June 5, 2003, the entire contents of which are hereby incorporated by reference.

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